WINGS - SPAR 1 OF THE WING AND WING TIP - INSPECTION

1. PLANNING INFORMATION

A. SB EFFECTIVITY

Aircraft affected:

MODEL	SN
Embraer 175( )	17000366, 17000376 thru 17000378, 17000381 thru 17000388, 17000390, 17000392 thru 17000513, 17000515 thru 17000523, 17000525 thru 17000580, 17000582 thru 17000586, 17000588 thru 17000592, 17000594, 17000595, 17000597 thru 17000601, 17000603, 17000604, 17000606 thru 17000719, and 17000721 thru 17000827, equipped with the affected component and Pre-Mod of SB170-57-0072.

Affected component:

Left-Hand (LH) Wing Tip Spar 1 PN 171-16231-001 or PN 171-16231-003.

Right-Hand (RH) Wing Tip Spar 1 PN 171-16231-002 or PN 171-16231-004.

NOTE: This effectivity list includes the aircraft that originally have the affected component installed, or that replaced it during maintenance actions, or that installed it through the accomplishment of SB170-57-0058.

In-production effectivity:

The subject presented in this bulletin does not affect any in-production aircraft.

B. CONCURRENT REQUIREMENTS

None.

C. REASON

(1) HISTORY

Embraer received a report of Right-Hand (RH) wing tip loss in flight. The crew declared emergency and the flight was diverted to a safe and uneventful landing. Aircraft had approximately 15,000 Flight Hour(s) and 10,000 Flight Cycle(s) at the time of the event.

Further Engineering analysis concluded that this event occurred due to premature crack propagation on the forward spar (spar 1) of the enhanced wing tip. The preventive modification for this issue is addressed in SB170-57-0072 (WINGS - WING TIP - SPAR 1 REPLACEMENT).

Due to this event, it is necessary to inspect the spar 1 of the wing and wing tip for cracks, at the region of their connections.

(2) OBJECTIVE

To inspect the spar 1 of the wing and wing tip, at the region of their connections. Also, if necessary, to direct the corrective actions if any finding is found during the accomplishment of the inspections given in this bulletin.

(3) EXPECTED BENEFITS

This inspection is to make sure that there is no crack(s) on the spar 1 of the wing and wing tip, at the region of their connections, preventing the loss of the wing tip.

(4) REVISION HISTORY

None.

D. DESCRIPTION

This Bulletin is divided into 02 PARTS, as follows:

PART I	**LH SPAR 1 OF THE WING AND WING TIP - INSPECTION**
Applicable to:	1.A. SB EFFECTIVITY

The modification presented in PART I of this bulletin consists of inspect the spar 1 of the Left-Hand (LH) wing and wing tip, at the region of their connections, to see if there is any crack(s) on them. Also, if necessary, to direct the corrective actions if any finding is found during the accomplishment of the inspections given in PART I of this bulletin.

To do this, it is necessary to get access to the area of Left-Hand (LH) wing, and open access panel 551AB, and remove the wing tip fairing.

PART II	**RH SPAR 1 OF THE WING AND WING TIP - INSPECTION**
Applicable to:	1.A. SB EFFECTIVITY

The modification presented in PART II of this bulletin consists of inspect the spar 1 of the Right-Hand (RH) wing and wing tip, at the region of their connections, to see if there is any crack(s) on them. Also, if necessary, to direct the corrective actions if any finding is found during the accomplishment of the inspections given in PART II of this bulletin.

To do this, it is necessary to get access to the area of Right-Hand (RH) wing, and open access panel 651AB, and remove the wing tip fairing.

NOTE: The modification presented in this bulletin affects Fatigue Critical Structure (FCS).

E. COMPLIANCE

1) SB CATEGORY

Category 01: MANDATORY

NOTE: 1) The affected component list (spar 1 of the wing tip) includes the aircraft that originally have the affected component installed, or that replaced it during maintenance actions, or that installed it through the accomplishment of SB170-57-0058. Refer to the fleet maintenance control record and verify if the spar 1 of the wing tip was replaced during routine maintenance to determine the current flight-hours and/or flight-cycles of the component.

2) The SB170-57-0072 is the final action for the repetitive inspections called in this bulletin.

(1) SB ACCOMPLISHMENT

(a) Applicable to PART I

1 For the wing tip spar 1 that have reached between 7,500 Flight Hour(s) and 10,399 Flight Hour(s), from the time of its installation, the incorporation of PART I of this service bulletin is recommended before the wing tip spar 1 have reached 11,650 Flight Hour(s) or within the next 2,500 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. This inspection must be repeated at each 1,000 Flight Hour(s) provided the wing tip spar 1 does not exceed 15,000 Flight Hour(s) from the time of its installation. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

2 For the wing tip spar 1 that have reached between 10,400 Flight Hour(s) and 14,399 Flight Hour(s), from the time of its installation, the incorporation of PART I of this service bulletin is recommended before the wing tip spar 1 have reached 14,600 Flight Hour(s) or within the next 1,250 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. This inspection must be repeated at each 1,000 Flight Hour(s) provided the wing tip spar 1 does not exceed 15,000 Flight Hour(s) from the time of its installation. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

3 For the wing tip spar 1 that have reached between 14,400 Flight Hour(s) and 19,799 Flight Hour(s), from the time of its installation, the incorporation of PART I of this service bulletin is recommended before the wing tip spar 1 have reached 19,810 Flight Hour(s) or within the next 200 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

4 For the wing tip spar 1 that have reached more than 19,800 Flight Hour(s), from the time of its installation, the incorporation of PART I of this service bulletin is recommended within the next 10 Flight Hour(s), from this service bulletin original issue date, and SB170-57-0072 must be accomplished.

(b) Applicable to PART II

1 For the wing tip spar 1 that have reached between 7,500 Flight Hour(s) and 10,399 Flight Hour(s), from the time of its installation, the incorporation of PART II of this service bulletin is recommended before the wing tip spar 1 have reached 11,650 Flight Hour(s) or within the next 2,500 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. This inspection must be repeated at each 1,000 Flight Hour(s) provided the wing tip spar 1 does not exceed 15,000 Flight Hour(s) from the time of its installation. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

2 For the wing tip spar 1 that have reached between 10,400 Flight Hour(s) and 14,399 Flight Hour(s), from the time of its installation, the incorporation of PART II of this service bulletin is recommended before the wing tip spar 1 have reached 14,600 Flight Hour(s) or within the next 1,250 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. This inspection must be repeated at each 1,000 Flight Hour(s) provided the wing tip spar 1 does not exceed 15,000 Flight Hour(s)

from the time of its installation. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

3 For the wing tip spar 1 that have reached between 14,400 Flight Hour(s) and 19,799 Flight Hour(s), from the time of its installation, the incorporation of PART II of this service bulletin is recommended before the wing tip spar 1 have reached 19,810 Flight Hour(s) or within the next 200 Flight Hour(s), from this service bulletin original issue date, whichever occurs first. SB170-57-0072 must be accomplished before wing tip spar 1 reaches 15,000 Flight Hour(s) from its installation.

4 For the wing tip spar 1 that have reached more than 19,800 Flight Hour(s), from the time of its installation, the incorporation of PART II of this service bulletin is recommended within the next 10 Flight Hour(s), from this service bulletin original issue date, and SB170-57-0072 must be accomplished.

F. APPROVAL

The technical aspects of this Service Bulletin are approved by: Embraer - Engineering Board.

G. COMMUNICATIONS TO EMBRAER

EMBRAER requests that any results found during these inspections be informed to your local EMBRAER representatives or offices.

H. ESTIMATED MANPOWER

This is an estimate of the manpower necessary to accomplish this Service Bulletin on a single aircraft.

It is intended for direct labor only, performed by experienced personnel and does not include the time to plan, prepare or inspect the work. Sealant, paint or adhesive curing times are not included either.

It is assumed that all the tools, parts and other means are readily available when necessary.

An adjustment to these values may be necessary to meet particular circumstances.

(1) Applicable to PART I

– Access opening: 1.0 man-hour.

– Inspection: 1.0 man-hour.

– Modification: None.

– Access closure: 1.0 man-hour.

– Test: None.

NOTE: These estimates do not include the time necessary to accomplish SB170-57-0072 and/or SB170-57-0073, if any finding is found during the inspections given in this bulletin.

(2) Applicable to PART II

– Access opening: 1.0 man-hour.

– Inspection: 1.0 man-hour.

– Modification: None.

– Access closure: 1.0 man-hour.

– Test: None.

NOTE: These estimates do not include the time necessary to accomplish SB170-57-0072 and/or SB170-57-0073, if any finding is found during the inspections given in this bulletin.

I. REFERENCES

AMM 170/( )	Aircraft Maintenance Manual PART II - 06-44-00 - DIMENSIONS AND AREAS.
AMM 170/( )	Aircraft Maintenance Manual PART II - 20-00-00 - STANDARD PRACTICES-AIRFRAME.
AMM 170/( )	Aircraft Maintenance Manual PART II - 57-30-25 - WINGS.
SB170-57-0058	WINGS - WING TIP, WING TIP LED LIGHT SYSTEM AND UPPER / LOWER LED RED BEACON INSTALLATION.
SB170-57-0072	WINGS - WING TIP - SPAR 1 REPLACEMENT.
SB170-57-0073	WINGS - REWORK OF THE WING OUTBOARD SPAR 1.

J. OTHER PUBLICATIONS AFFECTED

None.

2. MATERIAL INFORMATION

A. MATERIAL - PRICE AND AVAILABILITY

(1) MATERIAL AVAILABLE FROM EMBRAER

None.

(2) MATERIAL AVAILABLE FROM OTHER VENDORS

None.

B. INDUSTRY SUPPORT INFORMATION

None.

C. MATERIAL NECESSARY FOR EACH AIRCRAFT

When applicable, the use of alternative or similar parts is allowed, once it is approved by Embraer as indicated in the related Embraer Technical Publications or through a formal Embraer communication channel.

The necessary expendable or consumable parts presented in the AMM Tasks mentioned in this bulletin can be acquired from the operator's inventories or ordered as spares.

When necessary, additional information is presented as Notes in the respective Table.

(1) TOP KITS AND KITS

None.

(2) MATERIAL TO BE PROCURED

(a) Parts

None.

(b) Consumable Materials

None.

(c) Kit Updating

None.

D. MATERIAL NECESSARY FOR EACH SPARE

None.

E. REIDENTIFIED PARTS

None.

F. TOOLING - PRICE AND AVAILABILITY

Whenever required, the necessary tooling presented in the AMM Tasks mentioned in this bulletin, should be procured from the operator’s inventories or ordered as spares.

(1) The tooling presented below is required for the accomplishment of PARTS I and II of this bulletin:

ITEM PN	DESCRIPTION	QTY
GSE029	TOOL - SLAT CONTROL LEVER LOCKING	01

3. ACCOMPLISHMENT INSTRUCTIONS

NOTE:

1) For the purpose of this Service Bulletin, a Detailed Inspection (DET) is: “An intensive examination of a specific item, installation or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses, etc. may be necessary. Surface cleaning and elaborate access procedures may be required.”

2) If it is necessary to remove more parts for access, you can remove those parts. If you can get access without removing identified parts, it is not necessary to remove all of the identified parts.

3) Obey all of the WARNINGS and CAUTIONS included in the mentioned manuals and procedures.

4) The Manuals and other documents are mentioned as acronyms or with a simplified form. Refer to section 1.I. REFERENCES for a more complete definition.

5) This Service Bulletin is divided into 02 PARTS. The SB PARTS division allows their independent accomplishment.

REFERENCE APPLICATION TABLE

SB PART	FIGURE	FIGURE TITLE
I and II	Figure 1	SPAR 1 OF THE WING AND WING TIP - INSPECTION

The steps below outline the general accomplishment instructions.

The detailed sequence is included in the respective figure, when necessary.

WARNING: MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU ACCOMPLISH THE INSTRUCTIONS DESCRIBED IN THIS SERVICE BULLETIN. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.

A. Make sure that the aircraft is safe for maintenance. Refer to AMM TASK 20-00-00-910-801-A/200 - Aircraft Maintenance Safety Procedures - Standard Procedures.

B. PART I - LH SPAR 1 OF THE WING AND WING TIP - INSPECTION

(1) Get access to the work area as follows:

(a) Install the locking tool GSE 029 - TOOL - SLAT CONTROL LEVER LOCKING on the Slat/ Flap Control Lever (SFCL).

(b) Open these circuit breakers and put a Circuit Breaker Ring and Tag (Inoperative - Do not Operate) on each one of them:

– SLAT ACE 1 - LHCBP (DC BUS 1 FLIGHT CONTROLS)

– SLAT ACE1 AC PWR - LICC (AC BUS 1)

– SLAT ACE 2 - RHCBP (DC ESS BUS 2 FLIGHT CONTROLS)

– SLAT ACE2 AC PWR - EICC (AC ESS BUS)

– FLAP ACE 1 - LHCBP (DC ESS BUS 1 FLIGHT CONTROLS)

– FLAP ACE1 AC PWR - EICC (AC ESS BUS)

– FLAP ACE 2 - RHCBP (DC ESS BUS 3 FLIGHT CONTROLS)

– FLAP ACE2 AC PWR - RICC (AC BUS 2)

– HYDR ELEC PUMP SYS 2 - LHCBP (DC BUS 1)

– ACMP2B CMD - SPDA1 (CBMENU/CB BY SYS/HYD)

– HYDR ELEC PUMP SYS 3A - LHCBP (DC ESS BUS 1)

– E1 START VLV - SPDA2 (CBMENU/CB BY SYS/ENGINE)

– ACMP3B CMD - SPDA2 (CBMENU/CB BY SYS/HYD).

(c) Use a workstand to get access to the work area.

(d) Remove access panel 551AB. Refer to AMM TASK 06-44-00-800-801-A/100 - Wing Access Doors and Panels.

(e) Remove the wing tip fairing. Refer to AMM TASK 57-30-25-000-802-A/400 - Wing Tip Fairing Enhanced - Removal.

(2) Do a Detailed Inspection (DET) on the spar 1 of the Left-Hand (LH) wing and wing tip, at the region of their connections, to see if there is any crack(s) on them. Refer to Figure 1 for reference area to be inspected.

NOTE: Please report to Embraer the results of the inspection even if no cracks are detected. The results should be sent to your local EMBRAER representatives or offices.

(a) If any crack is found on the spar 1 of the wing tip, accomplish SB170-57-0072 immediately.

(b) If any crack is found on the spar 1 of the wing, accomplish SB170-57-0073 immediately.

(c) If there is no crack on them, no other action is required. Go to Step 3.B.(3).

1 Applicable to wing tip spar 1 that have reached less than 15,000 Flight Hour(s), from the time of its installation:

a After you do the first Detailed Inspection (DET) on the spar 1 of the Right-Hand (RH) wing and wing tip, a repetitive inspection on them must be done according to the intervals shown in 1.E. COMPLIANCE, until the accomplishment of SB170-57-0072 is completed.

2 Applicable to wing tip spar 1 that have reached 15,000 Flight Hour(s), from the time of its installation:

a Accomplish the SB170-57-0072 immediately.

(3) Close the access area as follows:

(a) Install access panel 551AB. Refer to AMM TASK 06-44-00-800-801-A/100 - Wing Access Doors and Panels.

(b) Install the wing tip fairing . Refer to AMM TASK 57-30-25-400-802-A/400 - Wing Tip Fairing Enhanced - Installation.

(c) Remove the Circuit Breaker Ring and Tag (Inoperative - Do not Operate) from each of these circuit breakers, and close them:

– SLAT ACE 1 - LHCBP (DC BUS 1 FLIGHT CONTROLS)

– SLAT ACE1 AC PWR - LICC (AC BUS 1)

- SLAT ACE 2 - RHCBP (DC ESS BUS 2 FLIGHT CONTROLS)
- SLAT ACE2 AC PWR - EICC (AC ESS BUS)
- FLAP ACE 1 - LHCBP (DC ESS BUS 1 FLIGHT CONTROLS)
- FLAP ACE1 AC PWR - EICC (AC ESS BUS)
- FLAP ACE 2 - RHCBP (DC ESS BUS 3 FLIGHT CONTROLS)
- FLAP ACE2 AC PWR - RICC (AC BUS 2)
- HYDR ELEC PUMP SYS 2 - LHCBP (DC BUS 1)
- ACMP2B CMD - SPDA1 (CBMENU/CB BY SYS/HYD)
- HYDR ELEC PUMP SYS 3A - LHCBP (DC ESS BUS 1)
- E1 START VLV - SPDA2 (CBMENU/CB BY SYS/ENGINE)
- ACMP3B CMD - SPDA2 (CBMENU/CB BY SYS/HYD).

(d) Remove the locking tool GSE 029 - TOOL - SLAT CONTROL LEVER LOCKING from the Slat/Flap Control Lever (SFCL).

(e) Remove the workstand from the work area.

C. PART II - RH SPAR 1 OF THE WING AND WING TIP - INSPECTION

(1) Get access to the work area as follows:

(a) Install the locking tool GSE 029 - TOOL - SLAT CONTROL LEVER LOCKING on the Slat/ Flap Control Lever (SFCL).

(b) Open these circuit breakers and put a Circuit Breaker Ring and Tag (Inoperative - Do not Operate) on each one of them:

- SLAT ACE 1 - LHCBP (DC BUS 1 FLIGHT CONTROLS)
- SLAT ACE1 AC PWR - LICC (AC BUS 1)
- SLAT ACE 2 - RHCBP (DC ESS BUS 2 FLIGHT CONTROLS)
- SLAT ACE2 AC PWR - EICC (AC ESS BUS)
- FLAP ACE 1 - LHCBP (DC ESS BUS 1 FLIGHT CONTROLS)
- FLAP ACE1 AC PWR - EICC (AC ESS BUS)
- FLAP ACE 2 - RHCBP (DC ESS BUS 3 FLIGHT CONTROLS)
- FLAP ACE2 AC PWR - RICC (AC BUS 2)
- HYDR ELEC PUMP SYS 2 - LHCBP (DC BUS 1)
- ACMP2B CMD - SPDA1 (CBMENU/CB BY SYS/HYD)
- HYDR ELEC PUMP SYS 3A - LHCBP (DC ESS BUS 1)
- E1 START VLV - SPDA2 (CBMENU/CB BY SYS/ENGINE)
- ACMP3B CMD - SPDA2 (CBMENU/CB BY SYS/HYD).

(c) Use a workstand to get access to the work area.

(d) Remove access panel 651AB. Refer to AMM TASK 06-44-00-800-801-A/100 - Wing Access Doors and Panels.

(e) Remove the wing tip fairing. Refer to AMM TASK 57-30-25-000-802-A/400 - Wing Tip Fairing Enhanced - Removal.

(2) Do a Detailed Inspection (DET) on the spar 1 of the Right-Hand (RH) wing and wing tip, at the region of their connections, to see if there is any crack(s) on them. Refer to Figure 1 for reference area to be inspected.

NOTE: Please report to Embraer the results of the inspection even if no cracks are detected. The results should be sent to your local EMBRAER representatives or offices.

(a) If any crack is found on the spar 1 of the wing tip, accomplish SB170-57-0072 immediately.

(b) If any crack is found on the spar 1 of the wing, accomplish SB170-57-0073 immediately.

(c) If there is no crack on them, no other action is required. Go to Step 3.C.(3).

1 Applicable to wing tip spar 1 that have reached less than 15,000 Flight Hour(s), from the time of its installation:

a After you do the first Detailed Inspection (DET) on the spar 1 of the Right-Hand (RH) wing and wing tip, a repetitive inspection on them must be done according to the intervals shown in 1.E. COMPLIANCE, until the accomplishment of SB170-57-0072 is completed.

2 Applicable to wing tip spar 1 that have reached 15,000 Flight Hour(s), from the time of its installation:

a Accomplish the SB170-57-0072 immediately.

(3) Close the access area as follows:

(a) Install access panel 651AB. Refer to AMM TASK 06-44-00-800-801-A/100 - Wing Access Doors and Panels.

(b) Install the wing tip fairing. Refer to AMM TASK 57-30-25-400-802-A/400 - Wing Tip Fairing Enhanced - Installation.

(c) Remove the Circuit Breaker Ring and Tag (Inoperative - Do not Operate) from each of these circuit breakers, and close them:

– SLAT ACE 1 - LHCBP (DC BUS 1 FLIGHT CONTROLS)

– SLAT ACE1 AC PWR - LICC (AC BUS 1)

– SLAT ACE 2 - RHCBP (DC ESS BUS 2 FLIGHT CONTROLS)

– SLAT ACE2 AC PWR - EICC (AC ESS BUS)

– FLAP ACE 1 - LHCBP (DC ESS BUS 1 FLIGHT CONTROLS)

– FLAP ACE1 AC PWR - EICC (AC ESS BUS)

– FLAP ACE 2 - RHCBP (DC ESS BUS 3 FLIGHT CONTROLS)

– FLAP ACE2 AC PWR - RICC (AC BUS 2)

– HYDR ELEC PUMP SYS 2 - LHCBP (DC BUS 1)

- ACMP2B CMD - SPDA1 (CBMENU/CB BY SYS/HYD)
- HYDR ELEC PUMP SYS 3A - LHCBP (DC ESS BUS 1)
- E1 START VLV - SPDA2 (CBMENU/CB BY SYS/ENGINE)
- ACMP3B CMD - SPDA2 (CBMENU/CB BY SYS/HYD).

(d) Remove the locking tool GSE 029 - TOOL - SLAT CONTROL LEVER LOCKING from the Slat/Flap Control Lever (SFCL).

(e) Remove the workstand from the work area.

D. Put the aircraft back to a serviceable condition.

E. Write the accomplishment of PART I and/or PART II of this bulletin in the applicable documents.

NOTE: Please use the online SB evaluation form available on the FlyEmbraer portal (http://www.flyembraer.com). Go to "Maintenance > eTechPubs > Utilities > SB Evaluation Form" to inform us about the SBs that you have incorporated in your fleet, as well as the difficulties found during the SB incorporation.
This will allow Embraer to consider your aircraft configuration when providing future modifications.
Your feedback will be much appreciated to improve the quality of Embraer modifications.

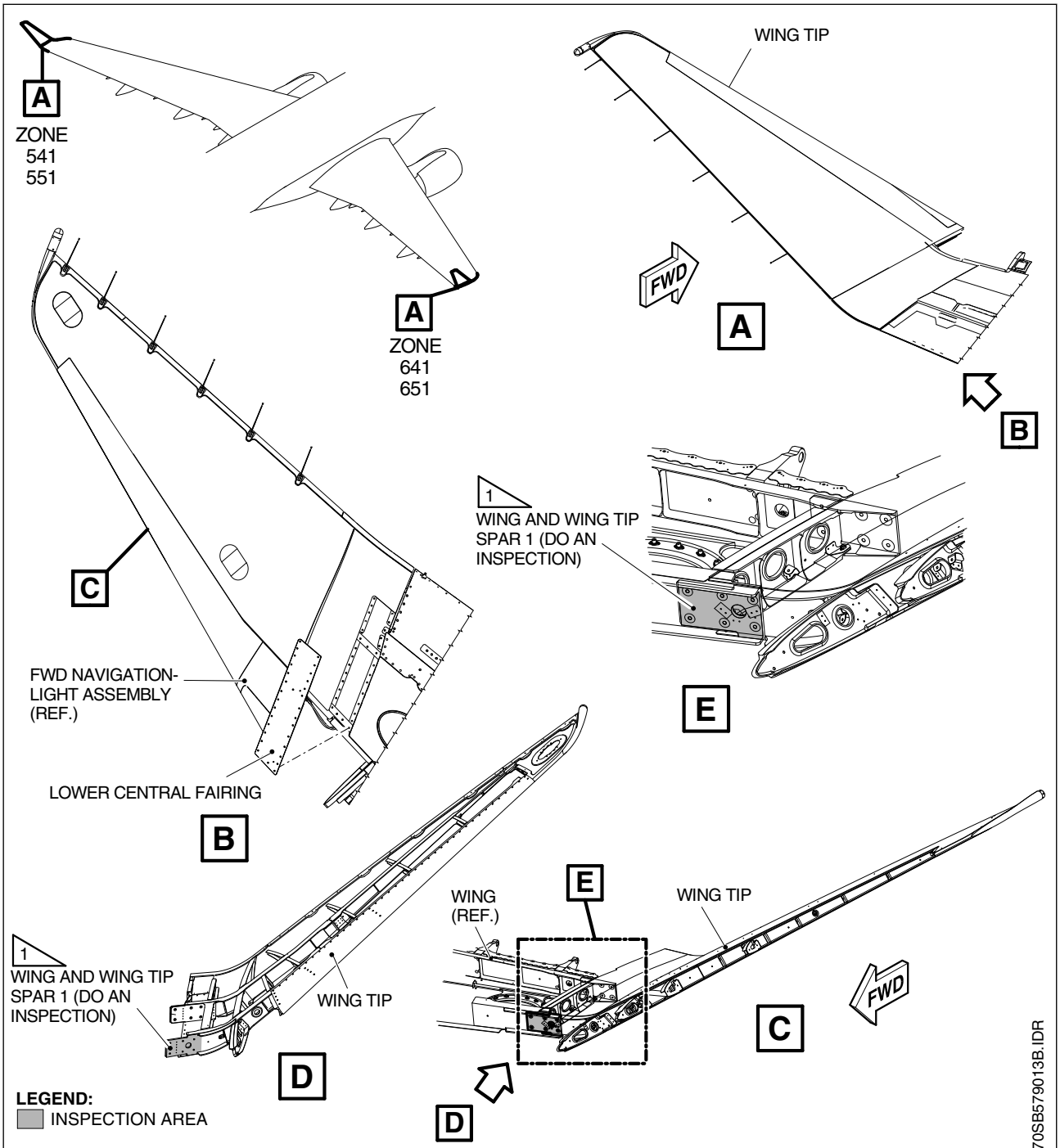

FIGURE 1 - SPAR 1 OF THE WING AND WING TIP - INSPECTION
(Sheet 1 of 1)